Symposium Program

1st November (Wednesday)

Welcome Address (10:00-10:05)

Tatsuo Saitoh (*PETRA*)

Session A: Opening (10:05-11:45)

Session Chair: Hideki Yagi (*PETRA, SEI*)

10:05　**A-1 (Keynote)**

Progress in Photonic Electronic Convergence Technologies through National Projects in Japan

Nobuhiko Nishiyama (*Tokyo Institute of Technology, PETRA*)

10:25　**A-2 (Plenary)**

3D Silicon Photonic Integrated Circuits

J. Bowers (*UCSB*)

11:05　**A-3 (Plenary)**

Expectations for Optical Technology from the Perspective of Computer Architecture

Hideharu Amano (*Keio University*)

11:45-13:40　Lunch break

Session B: Hybrid Integration (13:40-15:50)

Session Chair: Jinkwan Kwoen (*The University of Tokyo*)

13:40　**B-1 (Invited)**

Advantages and Challenges for Heterogeneous Integration of Active Optical Gain Elements in a Silicon Photonics Process in a Commercial Silicon Foundry

Edward Preisler (*Tower Semiconductor*)

14:15　**B-2 (Invited)**

CFB Solutions for High Performance Semiconductor Devices using Novel Bonding Technology

Hironori Furuta (*Oki Electric Industry*)

14:50　**B-3**

Photonic Integrated Devices using InP Chip/SOI Wafer Bonding Technique

Hideki Yagi, Naoki Fujiwara, Naoko Inoue, and Masaki Yanagisawa (*PETRA, SEI*)

15:10　**B-4**

Heterogeneous integration of III-V and phase change material for Si programmable photonic integrated circuits

Mitsuru Takenaka (*The University of Tokyo*)

15:30　**B-5**

Mode-Evolution based Integrated Magneto-Optical Isolator

Yuya Shoji (*Tokyo Institute of Technology*)

15:50-16:00　Coffee Break

Poster Session (16:00-18:00) @Collaboration room

Reception (18:00-20:00) @Tsubame Terrace

2nd November (Thursday)

Session C: Computing Architecture and Middleware (10:30-11:45)

Session Chair: Shinsuke Tanaka (*PETRA, Fujitsu*)

10:30 **C-1 (Invited)**
Approximate Interconnection Networks for Parallel Processing

Michihiro Koibuchi (*National Institute of Informatics*)

11:05 **C-2**
Towards a High-Performance Database Management System in Ultra-Low-Latency Networks

Yuta Namiki (*NEC*)

11:25 **C-3**
Utilizing Latch-Free Algorithms for Indexes in Ultra-Low Latency Networks

Yoshiharu Ishikawa (*Nagoya University*)

11:45-13:40 Lunch break

Session D: Optical Transceiver Architecture (13:40-15:50)

Session Chair: Mitsuru Takenaka (*The University of Tokyo*)

13:40 **D-1 (Invited)**
PIC-EIC Co-design for High-Speed Energy-Efficient Optical Interconnects

Azita Emami (*California Institute of Technology*)

14:15 **D-2**
Investigation and initial demonstration of electrical-to-optical offloading techniques for energy efficient coherent transceiver

Shinsuke Tanaka, Yohei Sobu, Tomoyuki Akiyama, Jun Matsui, Yutaro Enomoto (*PETRA, Fujitsu*)

14:35 **D-3**
Scalable Coherent Transceivers for Multi-Terabit Optical Links

Takuo Tanemura (*The University of Tokyo*)

14:55 **D-4 (Invited)**
Photonically-enabled ADCs with co-integrated neuromorphic signal processing

Andrea Zazzi (*Aachen Univ. RWTH*)

15:30-16:00 Coffee Break

Session E: Optical Computing and Networks (16:00-17:15)

Session Chair: Kento Sugiura (*Nagoya University*)

16:00 **E-1**
Data architectures for real-time applications

Hideyuki Kawashima (*Keio University*)

16:20 **E-2**
Functional Block-based Disaggregation and its QoT Estimation Prototype for Optical-layer Platform

Kiyo Ishii (*AIST*)

16:40 **E-3 (Invited)**
Optical Computing for the Generative AI era

Hitesh Ballani (*Microsoft Cambridge*)

Closing Address (17:15-17:25)

Shu Namiki (*AIST*)

Poster session (Wednesday)

P-01   Fabrication technology of a low-loss plasmonic waveguide for dense Si Photonics
V. Zayets (*Platform Photonics Research Center (PPRC), National Institute of Advanced Industrial Science and Technology (AIST)*)

P-02   A Compact Optical Sub-Assembly of Laser chip and Si Photonics based One-Chip Wavelength Locker
J. Suzuki (*Information Technology R & D Center, Mitsubishi Electric Corporation*)

P-03   A Si Photonics-based Mach-Zehnder Modulator Array assembly using Flip Chip Bonding
T. Fujita (*Information Technology R & D Center, Mitsubishi Electric Corporation*)

P-04   Study on Self-holding Magneto-optical Switch Integrated on Silicon Photonics Platforms
J. Wang (*Department of Electrical and Electronic Engineering, School of Engineering, Tokyo Institute of Technology*)

P-05   Demonstration of add-drop ring resonator switch using InGaAsP/Si hybrid MOS phase shifter
Y. Wakita (*The University of Tokyo*)

P-06   Bandwidth of Ge Photodiode in High Photocurrent Regime for Coherent Receiver
Y. Enomoto[a,b] (*a Photonics Electronics Technology Research Association (PETRA), b Fujitsu Limited*)

P-07   High-power CW operation of InP-based double-lattice photonic-crystal surface-emitting lasers with reflective metal mirror
M. Ogasawara (*Transmission Devices Laboratory, Sumitomo Electirc Industries, Ltd.*)

P-08   Silicon-Based All-Optical Mach-Zehnder Interferometer Thermo-Optic Switch
Z. Liang (*Department of Electrical and Electronic Engineering, Tokyo Institute of Technology*)

P-09   Coupling between Detuned Photonic Nanocavities by Frequency Modulation
R. Nagae (*Department of Electronic Engineering, Kyoto University*)

P-10   Compact Silicon Photonics -based Phased Array Wavelength -Selective Switch Using Micro Ring Resonators
Y. Ni (*Department of Electrical and Electronic Engineering, School of Engineering, Tokyo Tech.*)

P-11   Valley photonic crystal heterostructure based waveguide supporting slow-light modes with a large mode area
C. Zhang[a,b] (*a Research Center of Advanced Science and Technology (RCAST), The University of Tokyo, b Institute of Industrial Science (IIS), The University of Tokyo*)

P-12   Evaluation of the impact of the doping optimization on the modulation bandwidth and the optical loss of the InP - EO polymer hybrid optical modulator
H. Sakumoto (*Dept. of Electrical Engineering and Information Systems, The Univ. of Tokyo*)

P-13   Investigation of Performance of 2×2 Multimode Interference 3-dB Couplers in Silicon Waveguides Designed by Wavefront Matching Method
K. Takanishi (*Graduate School of Information Science and Technology, Hokkaido University*)

P-14   Mosaic-Based Power Splitters with Asymmetric Splitting Ratios Designed on Triangular Lattice
Y. Sawada[a,b] (*a Transmission Devices Laboratory, Sumitomo Electric Industries, Ltd., b Photonics Electronics Technology Research Association (PETRA)*)

P-15   Design and Demonstration of Optical-Frequency-Comb -Based Coherent Receiver Circuit
S. Maeda (*School of Engineering, The University of Tokyo*)

P-16   Numerical Analysis of Coherent Transmission Systems Employing III-V/Si Hybrid Transceiver PICs with Semiconductor Optical Amplifiers
T. Okimoto[a,b,c] (*a School of Engineering, The University of Tokyo, b Transmission Devices Laboratory, Sumitomo Electric Industries, Ltd., c Photonics Electronics Technology Research Association (PETRA)*)

P-17   Improvement of Temperature Characteristics of 1550 nm-Band Quantum Dot Lasers by HR Coating
R. Yabuki (*Faculty of Science and Engineering, Waseda University*)

P-18   Stable CW operation of InP-based gain region/Si waveguide lasers by chip-on-wafer hydrophilic bonding process using UV-ozone treatment
H. Fujikata[a,b] (*a Photonics Electronics Technology Research Association (PETRA) b Transmission Devices Laboratory,*

Sumitomo Electric Industries, Ltd.)

P-19   Short and High-Efficient Design of III-V/Si Connecting Structure Based on Tapered Asymmetric Directional Coupler
K. Uchida (*Graduate School of Information Science and Technology, Hokkaido University*)

P-20   Highly reproducible extraction of propagation loss in silicon waveguides by using a wafer-level OFDR method
T. Horikawa (*School of Engineering, Tokyo Institute of Technology*)

P-21   A Proposal of Penalty -Free and DSP -Free Multilevel Nyquist Modulation and Subcarrier Multiplexing Scheme Enabling Large Reduction of Power Consumption of Scalable Multicarrier Coherent Transmitter
J. Matsui[a,b] (*a Photonics Electronics Technology Research Association (PETRA), b Fujitsu Limited.*)

P-22   Effect of position misalignment between hybrid and Si waveguide sections in GaInAsP/SOI hybrid lasers
R. Sasaki (*Dept. of Electrical and Electronic Engineering, Tokyo Institute of Technology*)

P-23   64Gbaud PAM4 Operation of All-Silicon Segmented Mach-Zehnder Modulator Integrated with Passive RC Equalizer for Optical DAC Transmitter
Y. Sobu[a,b] (*a Photonics Electronics Technology Research Association (PETRA), b Fujitsu Limited.*)

P-24   Demonstration of low-loss optical power monitoring using waveguide-coupled InP/Si hybrid phototransistor
T. Akazawa (*The University of Tokyo*)

P-25   Demonstration of inference and training in deep learning using a symmetric silicon microring resonator crossbar array
R. Tang (*Department of Electrical Engineering and Information Systems, The University of Tokyo*)

P-26   Memory characteristics of FeFET-driven hybrid MOS optical phase shifter
M. Fujita (*Dept. of Electrical Engineering and Information Systems, The University of Tokyo*)

P-27   Photonic Matrix Multiplication with $Ge_2Sb_2Te_3S_2$ Intensity Modulators
Y. Miyatake (*The University of Tokyo*)

P-28   Design and Experiment of Silicon Racetrack -Loop Multi -Mode Waveguide Structure for Compact Reservoir Computing Device
S. Heinsalu (*Department of Electronic and Physical Systems, Waseda University*)

P-29   Performance comparison of wafer- and chip-level measurements of silicon photonic integrated circuits
M. Eissa (*Department of Electrical and Electronic Engineering, Tokyo Institute of Technology*)

P-30   Investigation of figure of merit setting in inverse design simulation for grating coupler with reduced back -reflection
Y. Wang (*Dept. of Electrical and Electronic Engineering, Tokyo Institute of Technology*)

P-31   SiN/Si hybrid integration via inversed taper edge coupler
J. Kokubu (*Department of Electronics and Electrical Engineering, Faculty of Science and Technology, Keio Univ*)

P-32   Sudden broadening of the linewidth in a modulation instability comb
S. Kogure (*Department of Electronics and Electrical Engineering, Faculty of Science and Technology, Keio University*)

P-33   Ge avalanche photodiode integrated with microring resonator for 2 μm wavelengths on Ge-on-insulator platform
C. Zhang (*The University of Tokyo*)

P-34   Demonstration of edge transmission route switching using topological phase interference devices
S. Okada (*Department of Electrical and Electronic Engineering, Tokyo Institute of Technology*)

P-35   Topological optimization of diffraction grating in SLG beam scanner
K. Hirotani (*Dept. of Electrical and Computer Eng., Yokohama Nat'l Univ.*)

P-36   Modulation characteristics of microring modulators with self-heating
L. Li (*Yokohama Nat'l Univ.*)

P-37   Ambient Light Immunity of Si Photonics Full-Integrated FMCW LiDAR Chip ― Theory and Probability of Mutual Interference ―

M. Kamata (*Yokohama Nat'l Univ*)

P-38   Low-Loss VCSEL Coupler in Si Photonics
N. Tahara (*Dept. of Electrical and Computer Engineering, Yokohama National University*)

P-39   Triple-Parallel Si Mach-Zehnder Optical Modulators for Low-Power Flexible Transmitters
K. Kawahara (*Department of Electrical and Computer Engineering, Yokohama National University*)

P-40   Prism Lens for Beam Collimation of Si Photonic Crystal Beam Scanner and LiDAR - Comparison of High-NA, Low-Profile Design and Two-Piece Design -
K. Yamamoto (*Dept. of Electrical and Computer Engineering, Yokohama National University*)

P-41   OFDR Analysis of Si Photonics Components
S. Nawa (*Dept. of Electrical and Computer Engineering, Yokohama National University*)

P-42   Si photonics FMCW LiDAR chip using direct laser modulation and integrated optical interferometer for k -clock generation
S. Yamazaki (*Dept. Electrical and Computer Eng., Yokohama Nat'l Univ.*)

P-43   All-arsenide stacked InAs quantum dots grown on InP substrate
J. Kwoen (*Institute for Nano Quantum Information Electronics, The University of Tokyo*)

P-44   High temperature operation of InAs/GaAs quantum dot laser with AlGaAs lateral potential barrier layers
M. Kakuda[a,b] (*a Institute for Nano Quantum Information Electronics, The University of Tokyo, b AIO Core Co., Ltd.*)